



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,208	10/29/2003	Jay R. Walton	010454D1	7298

23696 7590 10/03/2008  
QUALCOMM INCORPORATED  
5775 MOREHOUSE DR.  
SAN DIEGO, CA 92121

EXAMINER
----------

EWART, JAMES D

ART UNIT	PAPER NUMBER
----------	--------------

2617

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

10/03/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com  
kascanla@qualcomm.com  
nanm@qualcomm.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/696,208	<b>Applicant(s)</b> WALTON ET AL.	
	<b>Examiner</b> James D. Ewart	<b>Art Unit</b> 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on July 11, 2008 RCE.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Response to Arguments***

1. Applicant's arguments filed July 11, 2008 have been fully considered but they are considered moot in view of new grounds of rejection.
2. The 35 USC § 101 rejection of claim 21 has been overcome by amendment and thus the Examiner withdraws this rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1, 2, 5 - 8, 12, 13, 15 - 21, 23-25, 27, 28, 30 and 31 rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (US Patent No. 5,870,378) henceforth Huang in view of Fasel (Narrow-Band Interference Rejection in Orthogonal Multi-Carrier Spread-Spectrum Communications)

Regarding claims 1, 12, 13, 18-22 and 27, Huang teaches in a multiple-access OFDM-CDMA system, a method for recovering data transmitted over a wireless communication channel, comprising: processing a received signal to provide data samples; a means for recovering the data samples with a cover code to provide recovered samples (pilot PN generator 1121 and Multi code Walsh generator 1212 to using a PN sequence (cover code) and Walsh

Code (cover code) to recover (discover) data signals (data samples) [Abstract, Column 10. Lines 42-52 & Figure 12) means transforming the data samples in accordance with a particular transformation to provide transformed samples(Figure 14, 1401); despreading the transformed samples with one or more sets of despreading coefficients to provide despread samples (Figure 14, 1402), wherein each set of despreading coefficients is associated with a respective despreading code that corresponds to a spreading code used to spread data prior to transmission and selected from a set of available spreading codes (Column 12, Lines 12-33); combining the despread samples for each time interval to provide a demodulated symbol representative of a transmitted OFDM symbol (Column 10, Lines 23-41; and decoding demodulated symbols to provide decoded data (Figure 4, 409 and Column 4, Lines 51-55), but does not teach transforming the data samples in the frequency domain prior to despreading the transformed samples. Fasel teaches transforming the data samples in the frequency domain prior to despreading the transformed samples (page 46, lines 15-20). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to combine the teaching of Huang with the teaching of Fasel of transforming the data samples in the frequency domain prior to despreading the transformed samples to provide a method for evaluating the quality of the signal in the frequency domain.

Regarding claims 2, 23 and 28, Huang further teaches discovering the data samples with a cover code to provide discovered samples, wherein the transforming is performed on the discovered samples (Pilot PN sequence generator 1121 and Multi-code Walsh generator 1212 to

using a PN sequence (cover code) and Walsh code (cover code) to uncover data signals [col. 10, lines 42-52, Fig. 12]).

Regarding claims 5, 24 and 30, Huang further teaches combining demodulated symbols derived from a plurality of received signals to provide combined demodulated symbols [col. 2, lines 21 - 31, col. 9, lines 7 - 14, Fig. 9].

Regarding claims 6 and 17, as applied to claims 5 and 16, Huang further teaches the plurality of received signals are transmitted from a plurality of cells or sectors in the system (col. 3, lines 23 - 35).

Regarding claims 7, 8, 25 and 31, as applied to claim 1, Huang further teaches comprising: estimating a response for the communication channel, and wherein each set of despreading coefficients is derived based in part on a set of weights indicative of the estimated channel response and the channel response is estimated based on a pilot included in the received signal (Channel weighting function determines channel estimate derived from the pilot included in the received signal. [col. 4, lines 54 -61, col. 9, lines 27 - 41]). A Walsh code pilot signal is added, at the transmitter, for signal detection at the receiver [col. 3 lines 55 - 63, Fig. 2]. At the receiver, a detection strategy used in lieu of despreading coefficients, a finger unit 508 functions as pilot searchers to detect Walsh pilot signals to facilitate the recover of data signal(s) [col. 5, lines 25 - 36, Fig. 5]).

Regarding claim 15, as applied to claim 13, Huang further teaches a multiplier operative to discover the data samples with a cover code to provide discovered samples, wherein the transformer is operative to transform the discovered samples (Multipliers 808, 811, 814 used in the multiplication of recovered (discovered) data signals [col. 9, lines 7 - 25, Fig. 9]).

Regarding claim 16, as applied to claim 13, Huang further teaches a second summer operative to combine demodulated symbols derived from a plurality of received signals to provide combined demodulated symbols (Multiple accumulators (summers) for combining demodulated symbols from multiple received signals [804, 807, 810, 813, Fig. 8]).

### ***Claim Rejections. 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 3, 4 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang in view of Fazel in further view of Agee et al. (US Pub. 2004/0095907) henceforth Agee.

Regarding claims 3, 4, 14 and 29, Huang teaches the limitations of claims 1 and 13, but does not teach a buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbol. Agee teaches buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbol. Agee teaches a buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbol. Agee teaches buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbol (Transceiver, a device that comprises both a transmitter and receiver, consist of buffer for "stripping off" (discarding) added cyclic prefixes (pages 24 - 25, paragraphs [0270] - [0271], page 26, paragraph [0282], page 32, paragraph [0392])). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Huang and Fazel to incorporate a buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbol. Agee teaches buffer operative to discard data samples corresponding to a cyclic prefix appended to each OFDM symbols as taught by Agee to provide a means for removing the cyclic prefix that is added to a radio signal in order to avoid reception problems that may occur in a multi-path environment (page 25, paragraph [0271], page 26, paragraph [0282]). Regarding claim 4, applied to claim 1, Huang teaches the transformation is a Fast Walsh-Hadamard Transformation (col. 2, lines 6 - 13) but does not teach the transformation is a Fourier transform. Agee teaches the transformation is a Fourier transform (pages 25 - 26, paragraphs [0270] - [0271]). It would have been obvious to one of ordinary skill

in the art at the time the invention was made to modify Huang and Fazel to incorporate the transformation is a Fourier transform as taught by Agee to provide adaptive arrays with synergistic blend, eliminate feedback, and simplify the equalization process (page 25, paragraph [0271], page 26, paragraph [0282]).

5. Claims 9 – 11, 26 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang and Fazel in further view of Brink et al.

Regarding claims 9-11, 26 and 32, Huang teaches a pilot is added to the transmitted signal received by the receiver and the pilot channel carrying the pilot signal is used to obtain the channel estimate from which energy or power measurement is determined (col. 9, lines 27 - 40, col. 11, lines 65 - 67, col. 12, lines 1 - 5). However, Huang does not teach estimating a quality of the received signal, transmitting power control commands derived based on the estimated received signal quality, and the receive signal quality is estimated based on the pilot included in the received signal and/or the demodulated symbols. Brink teaches estimating a quality of the received signal, transmitting power control commands derived based on the estimated received signal quality, and the receive signal quality is estimated based on the pilot included in the received signal and/or the demodulated symbols (Determination of the signal quality of a received signal can be derived from the pilot symbols or demodulated symbols. Power measurements that are derived from the signal quality measurements are useful in to determine the necessary power levels and the instructions needed to facilitate effective communication [col. 5, lines 61-67, col. 6, lines 1 -13, lines 38 - 60, col. 9, lines 46 - 58]). It would have been obvious



to one of ordinary skill in the art at the time the invention was made to modify Huang and Fazel to incorporate estimating a quality of the received signal, transmitting power control commands derived based on the estimated received signal quality, and the receive signal quality is estimated based on the pilot included in the received signal and/or the demodulated symbols as taught by Brink because all the above factors relating to received signal quality are essential components necessary for effective and efficient communication between a base station and a mobile terminal (col. 9, lines 36 - 58).

***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James D. Ewart whose telephone number is (571) 272-7864. The examiner can normally be reached on M-F 7am - 4pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne Bost can be reached on (571) 272-7023. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and (571) 273-8300 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

/James D Ewart/

Examiner, Art Unit 2617

/Dwayne D. Bost/  
Supervisory Patent Examiner,  
Art Unit 2617